

**The invention claimed is:**

1. An apparatus for forming molded food products having an outer first component and an inner second component, comprising:
  - 5 a pressurized supply of first component;
  - a pressurized supply of second component, wherein at least one of said first and second components is a food product;
  - a mold housing extending along a first direction;
  - a first end portion, a second end portion, and an injector portion, the first
  - 10 and second end portions arranged to be movable along the first direction within the mold housing and to be separated by a pre-selected distance along the first direction, and said injector portion being in fluid communication with said supply of pressurized second component, said first and second end portions arranged to be contained within said mold housing in a fill position to form a mold cavity
  - 15 within the mold housing around the injector portion, said injector portion extending into said cavity along the first direction, said mold cavity having an inlet in fluid communication with said supply of pressurized first component when in said fill position to receive first component to form a shell having an inside void, and said first and second end portions being relatively movable along the first
  - 20 direction with respect to the mold housing and the injector portion, the injector portion providing a pathway for said pressurized second component into said inside void of the shell to fill the inside void with said second component to complete a molded food product, said first and second end portions being further

movable with respect to the mold housing to a discharge position to expose the molded food product outside the mold housing in order to remove the molded food product from between the end portions.

5           2.     The apparatus according to claim 1, wherein said mold housing comprises a tube and said first and second end portions comprise end faces of front and rear rods that are fit in sliding fashion within said tube.

          3.     The apparatus according to claim 1, wherein said injector portion  
10 comprises an injector tube, said injector tube having an open end extending into said mold cavity, said open end sealed against said first end portion when said mold cavity is in said fill position and said open end exposed within said mold cavity by differential movement between said first end portion and said injector portion.

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          4.     The apparatus according to claim 3, comprising a mechanism for moving said first and second end portions along the first direction from the fill position toward the discharge position with respect to said injector tube, said open end relatively moves within said inside void along a reverse direction to  
20 said first direction, and as said open end moves, said inside void is filled along its length with said second component.

5. The apparatus according to claim 4, wherein said injector portion is relatively movable with respect to said first and second end portions until said inside void is filled; and

comprising a mechanism operatively connected to said injector portion to  
5 move said injector portion, after said inside void is filled, with said first and second end portions to said discharge position.

6. A method for forming a molded food product having a first component surrounding an inner, second component, comprising the steps of:

10 arranging a mold cavity defined by an outer wall and an inner tube, said inner tube having an open end, and two end wall portions spaced apart and positionable within the outer wall;

filling the mold cavity with a first component forming a shell having an inside void;

15 relatively retracting the inner tube along a first axis with respect to the mold cavity and filling the inside volume occupied by the inner tube with the second component through the inner tube and out of the inner tube open end to complete the molded food product, wherein at least one of said first and second components is a food product; and

20 moving the end wall portions along the first axis to a position wherein the molded food product is outside the outer wall to remove the molded food product.

7. The method according to claim 6, wherein the inner tube open end is relatively movable with respect to the end wall portions only to positions at or between the end wall portions.

5 8. The method according to claim 7, wherein the outer wall is stationary and the end wall portions are formed on rods which are configured to slide within said outer wall.

9. The method according to claim 6, wherein said inner tube is  
10 movable with respect to the outer wall.

10. A food product molding mechanism for molding two component rod-shaped food products, comprising:

a pump for pumping a shell component material under pressure into one  
15 end of a fill passage;

a mold tube assembly mounted in alignment with the other end of the fill passage, the mold tube assembly including a plurality of elongated mold tubes each of given length, each mold tube aligned parallel to a predetermined mold path and each mold tube having a fill opening aligned with the fill passage;

20 a mold rod assembly comprising:

a front drawbar;

a rear drawbar;

guide means, interconnecting the drawbars, for maintaining the drawbars in fixed spaced relation to each other adjacent opposite ends of the mold tube assembly, with each drawbar extending across the mold path;

5           a set of front mold rods, mounted on the front drawbar, each projecting toward the mold tube assembly parallel to the mold path and in alignment with one of the mold tubes;

          a set of rear mold rods, mounted on the rear drawbar, each projecting toward the mold tube assembly parallel to the mold path and  
10       into one of the mold tubes;

          the ends of the front and rear mold rods aligned with each mold tube being spaced from each other by a predetermined distance  $L$  less than the length of the mold tube, and forming a mold cavity of length  $L$  within said mold tube;

15           at least one of said front mold rods or said rear mold rods being hollow and providing an injection path into said cavity;

          drive means, connected to the mold rod assembly, for cyclically reciprocally driving the mold rod assembly along the mold path between a fill position, in which shell component material flows from the fill passage  
20       into each mold tube between the spaced ends of the mold rods to form a shell of length equal to the length  $L$  in each mold tube, and the discharge position in which the ends of both sets of mold rods are clear of the front

ends of the mold tubes and each rear mold rod fills the interior of its associated mold tube; and

a supply of filler component flowable through said injection path and into said shell.

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11. The apparatus according to claim 10, comprising an injector tube arranged within said injection path, and a mechanism for moving said injection tube relatively to said front mold rod, said injector tube positionable in part within said mold cavity to provide a void within said shell when molded, said injector  
10 tube having an open end that is exposable within said mold cavity, said injector tube flow connected to said supply of filler component to fill said void with filler component.